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book "is not intended for biologists, but rather for those who would like a brief introductory outline of this important phase of biological theory." Nevertheless it will doubtless prove a very useful work in the hands of beginners in biology and of the "nature-study" teacher, and is sure to be attractive to the general reader because of the wealth of illustrative material which it contains. This material has been selected with great care and forms an integral part of the work. It is one of the best of the popular treatises on evolution.

W. E. C.

BOTANY.

Plant-Breeding.[1] — This useful and deservedly popular handbook, originally published in 1895, now appears in a third edition, revised so as to cover the important period since 1900, when Mendel's law was rediscovered. The work meets the needs of a wide circle of readers, including the general public particularly interested at the present time in the subject of horticulture, the practical plant-breeder, and the student. To the student the extensive bibliography appended to the book will be especially valuable.

W. E. C.

Haberlandt's Physiological Anatomy of Plants.[2] — It is now twenty years since the first edition of this work appeared and despite the mass of new material which has accumulated in that time, the author is able to adhere to his original plan in the exposition of the structures and functions of plant tissues. There is, indeed, not so much difference between this third edition and the second published in 1896, as there was between the last named and the first imprint of 1884. Nevertheless there is a considerable amount of new material, as is shown by the fact that the number of pages has increased from 550 to 616, and that the illustrations number 29 more in the new edition.

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[1] Bailey, L. H. *Plant-breeding, being five Lectures upon the Amelioration of Domestic Plants.* New York. Macmillan Co., 1904. 16mo, 3d edition. xiii + 334 pp., frontispiece and 20 text-figs.

[2] Haberlandt, G. *Physiologische Pflanzenanatomie.* Leipzig. Engelmann, 1904. 8vo, 3rd edition. xvi + 616 pp., 264 figs. in text.

It is near the end of the book that the greatest change is to be noticed. In place of the eleventh chapter on tissues for special functions, we find the subject augmented to three chapters as follows: tissues for movement, sense organs, and tissues for conducting stimuli. In the first is an account of the passive hygroscopic movements of certain plant parts, and of the active movement, as seen in pulvini, stamens, etc. In the second is an elaborate treatment of the statolith theory, as well as descriptions of various forms of sensitive hairs and papillæ. In the third part the writer considers the propagation of stimulus in Mimosa, and in his explanation adheres to his former point of view. Here also he gives an account of *inter-* and *intra-*cellular conduction of stimuli.

Haberlandt's treatment of anatomy well deserves the prefix physiological, and stands, as it is intended to, in striking contrast to the mere topographical anatomy of many other writers. Any hard and fast system must naturally have a narrowing influence and a too ready acceptance of all the classifications of tissues and interpretations of functions in Haberlandt's book would no doubt lead the reader into the sloughs of teleology. We can however make what reservations we wish in his causal explanations and still have left a wonderfully suggestive and stimulating analysis of the aspects of plant tissues, viewed from a functional standpoint. That the author may at times carry this idea of the purposeful development of tissues too far, cannot be denied, yet even this is better than a purely formal treatment of the subject from a regional standpoint only. At least there is impressed upon the reader that plant tissues have functions, and that these functions constitute a real interest in the study of anatomy. In these days of increased interest in physiological problems and of the advance in knowledge of physiological processes, such a book as this will come more and more into consideration. The physiologist and ecologist, whether or no they always agree with the author, must frequently have occasion to consult the book and it may be suggested that the topographical and phylogenetic anatomist would do well to pay greater attention to Haberlandt's point of view.

There is one thing omitted from the book which should perhaps have found place, namely, a closing chapter by way of a general summing up of the inter-relations of the various "systems," so that a more complete picture of the plant as a whole might be obtained. The section of half-a-dozen pages in the first chapter, in which the physiological efficiency of the tissues is treated, does not fill the want, which could best be supplied at the end, after all the types of tissues had been taken up. Possibly the author has purposely left the reader to construct for himself this picture of the plant as a whole.

The appearance of a book as valuable as this in a foreign language, always brings with it a certain regret when there is no similar work available in English. Excellent as it is, the translation of DeBary's anatomy is now very far behind the times and there is no other detailed account of plant anatomy in our language. In common with many others we hope that a translation of this third edition of Haberlandt's work will not be long in forthcoming.

H. M. R.

British Fresh-water Algæ.[1] — In his treatise on the British Fresh-water Algæ, G. S. West gives a general view of this group, based largely upon his own studies of the British Algæ. The great changes that have been made in recent years and the consequent limiting of the usefulness of previous monographs is noted. The need of a monograph of the fresh-water Algæ which may be used to determine the genera and species is also called to one's attention. The book contains many new facts concerning life histories, development, and relationships of the Algæ. It is illustrated by a large number of text-figures most of which are original and the localities from which the specimens were taken are noted. The Peridineæ and Characeæ are left out as not being certainly true Algæ. Besides a short preface, there is an introduction in which, after disposing of the historical considerations, the author discusses the occurrence, collection, preservation, and cultivation of the Algæ. Another chapter is devoted to a brief consideration of the six classes of the fresh-water Algæ, their vegetative, asexual and sexual reproduction, polymorphism ; and the remainder of the chapter is given over to a discussion of the phylogeny and classification, which is based on the latest work on the various groups. The main portion of the book deals with the various classes, orders, and families, with a full description of each genus. As a rule each genus is illustrated, often by more than one species. Under each genus are brief notes and accurate measurements of the British species most frequently met with. The work recognizes the law of priority in dealing with the names of the genera, thus tending to fix in general use certain older but much less generally used names.

J. A. C.

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[1] West, G. S. *British Fresh-water Algæ.* Cambridge Biol. Series, Cambridge Univ. Press, 1904. 8vo, xv + 373 pp., 166 figs. in text. 10/6.